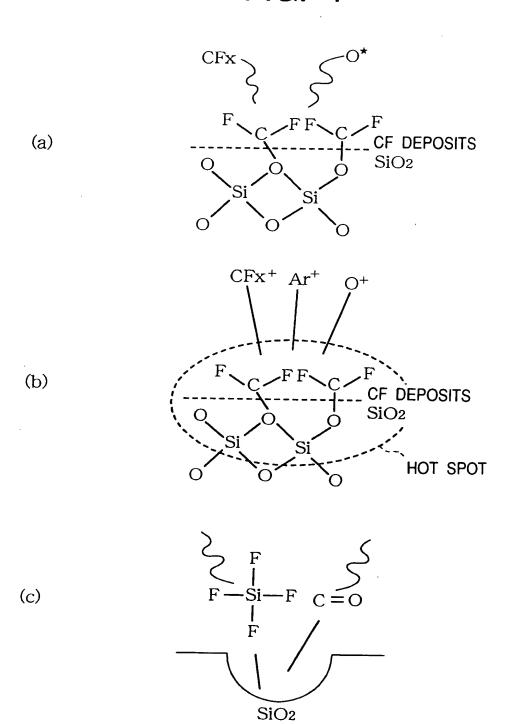


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1 / 85

FIG. 1



METASTABLE STRUCTURE

(d)
$$O \longrightarrow Si \longrightarrow O \longrightarrow C \longrightarrow H$$

$$O \longrightarrow Si \longrightarrow O \longrightarrow C \longrightarrow H$$

$$O \longrightarrow H$$

$$DECOMPO \longrightarrow VAPOR-$$
SITION VAPOR-

FIG. 3

FIG. 4

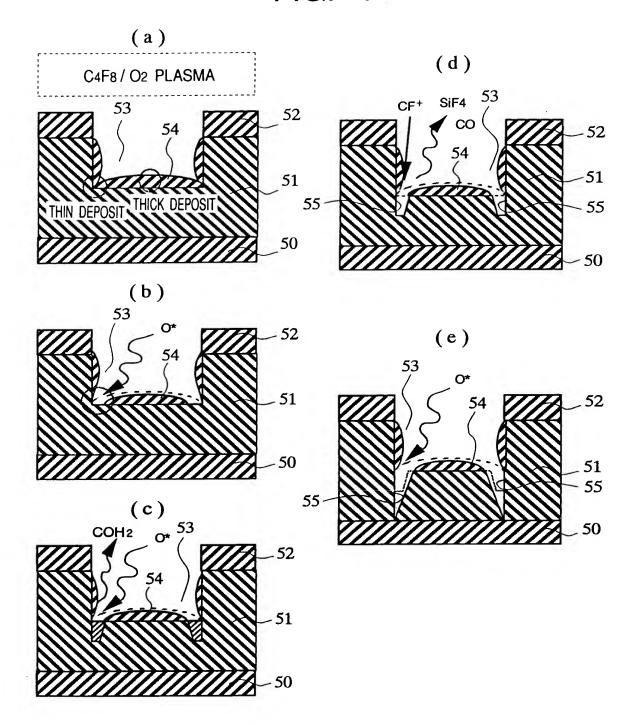
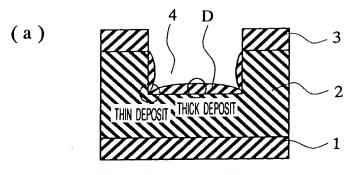
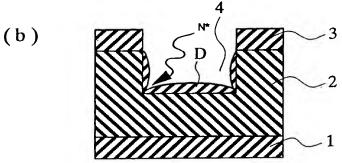


FIG. 5

FIG. 6





- (c) CF⁺, Ar⁺, N⁺
 2
- SiF₄ CO CN

 (d)

 3

 2

- 1: INSULATING FILM
- 2: ORGANIC INSULATING FILM
- 3: PHOTORESIST FILM
- 4: RECESS

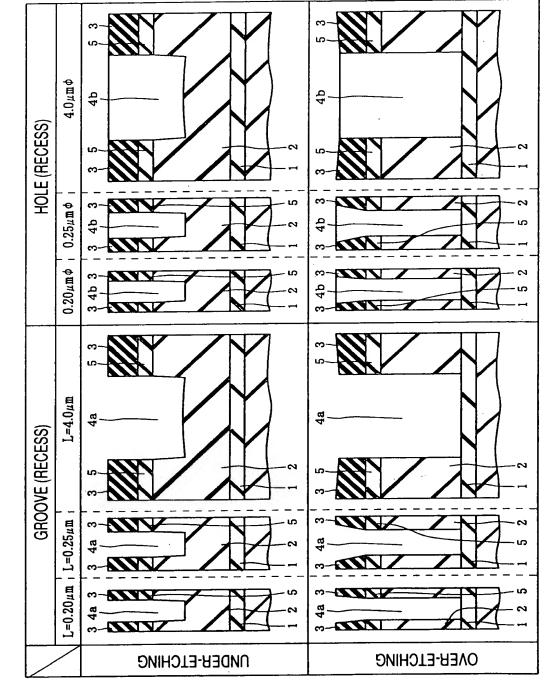


FIG. 7



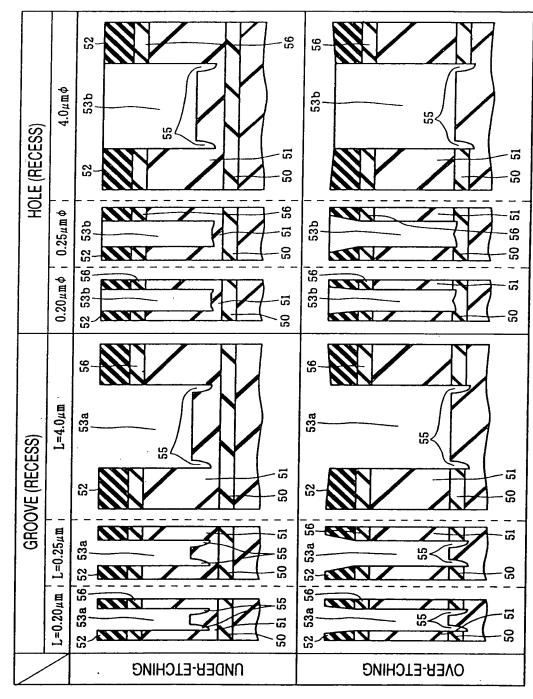
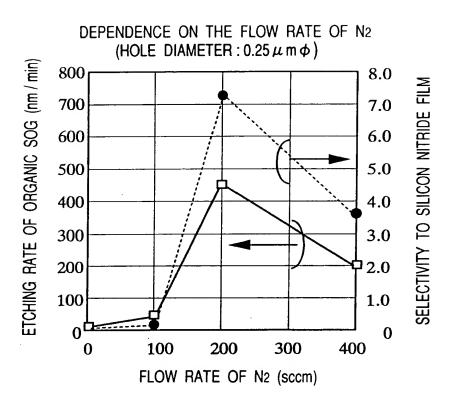


FIG. 9



- ☐ ETCHING RATE OF ORGANIC SOG (nm/min)
- SELECTIVITY TO SILICON NITRIDE FILM

F/G. 10

	CF GAS ALONE	CF GAS/O ₂	CF GAS/N2
ETCHING RATE	×	0	0
SELECTIVITY	×	×	0
FORM	abla	O ×	0
ELIMINATION PROPERTY	×	0	0
SYNTHETIC EVALUATION	×		0

FIG. 11

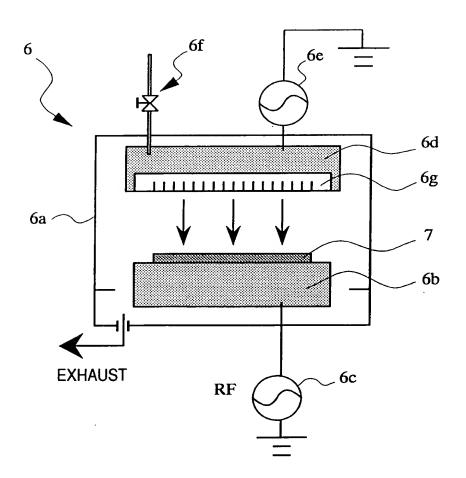


FIG. 12

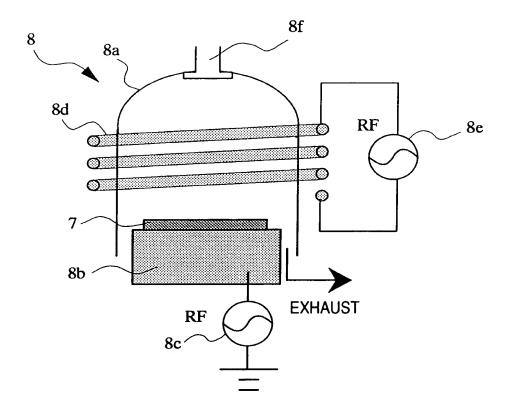
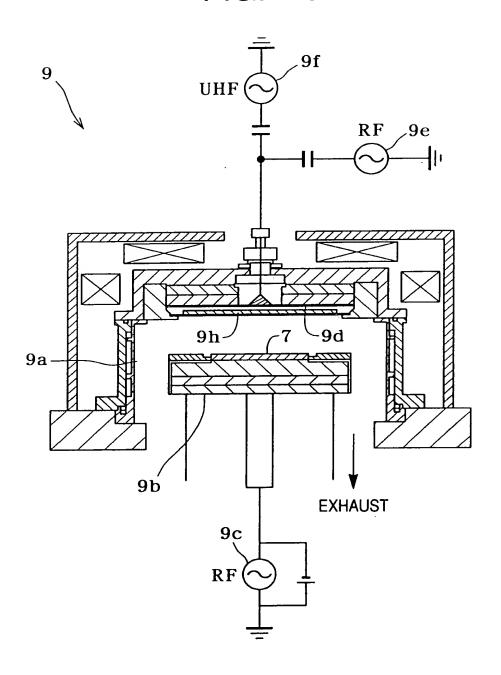
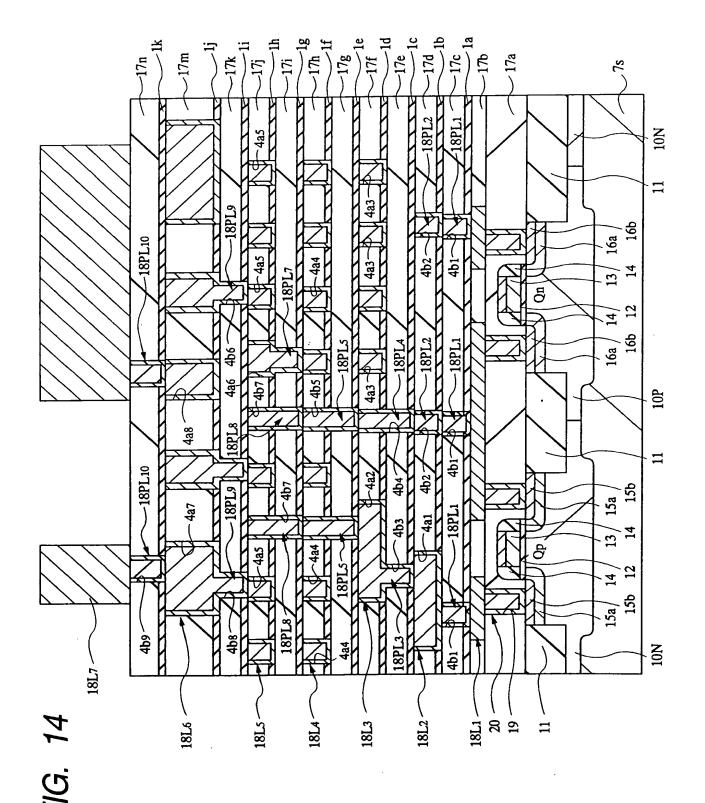


FIG. 13



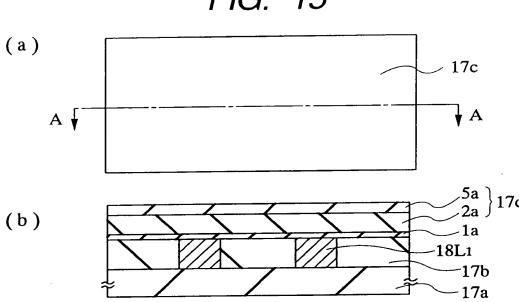
14/85

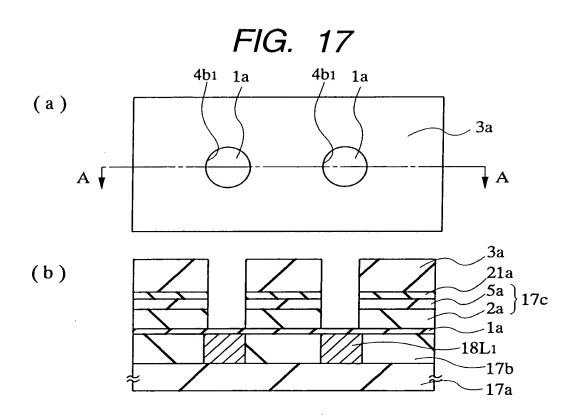


___1a -18**L**1

−17b −17a

FIG. 15





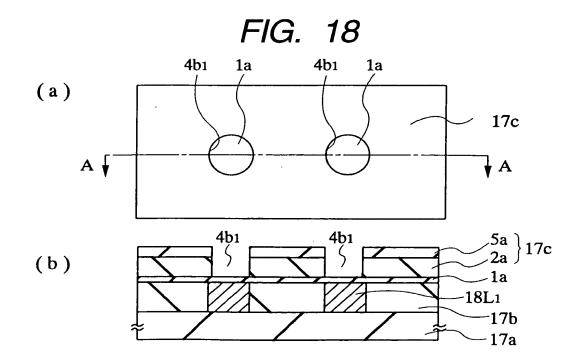
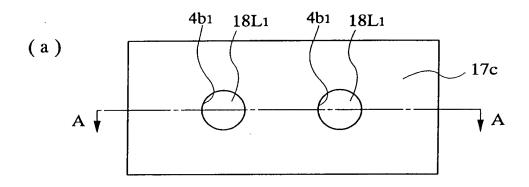
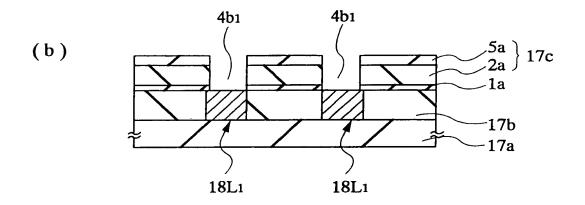


FIG. 19





Commence of the second

FIG. 20

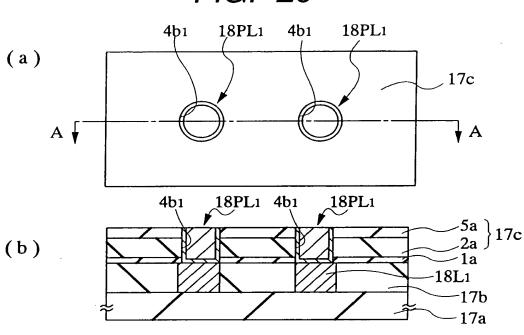


FIG. 21

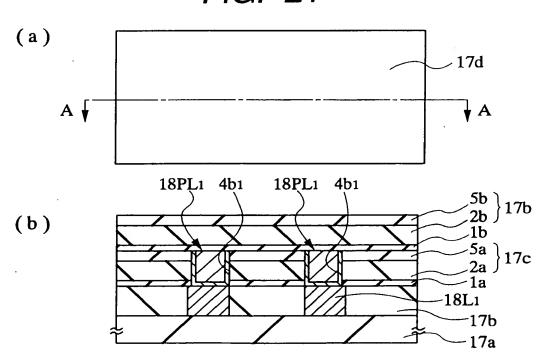
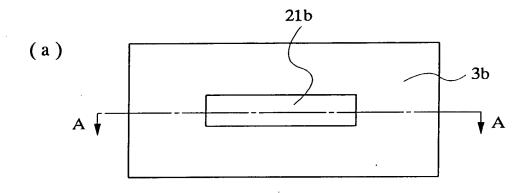


FIG. 22



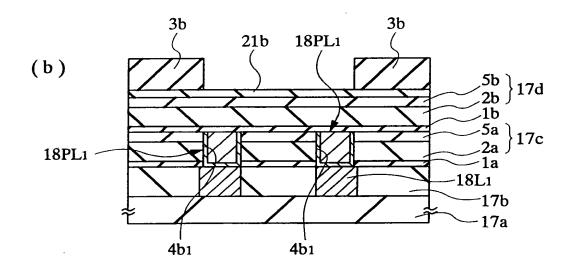
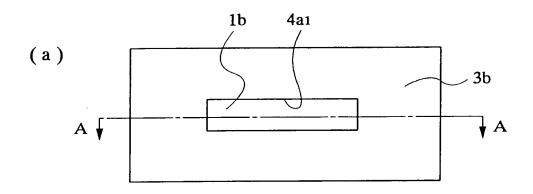


FIG. 23



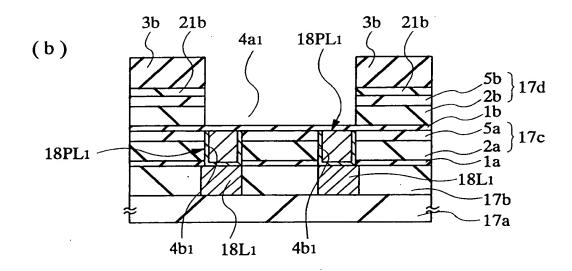
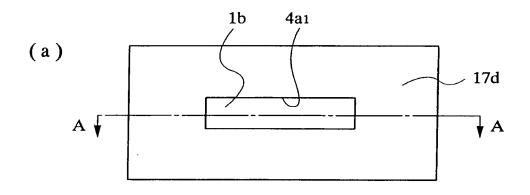


FIG. 24



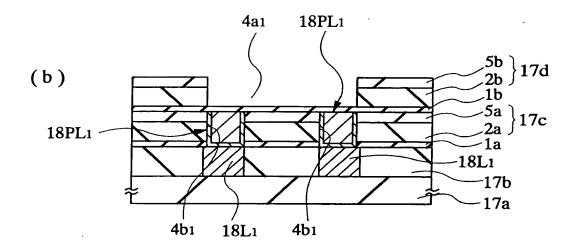
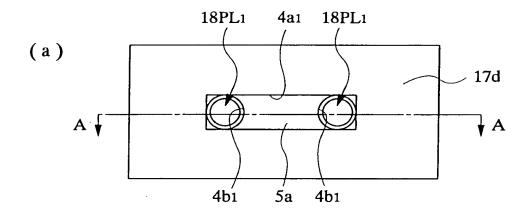
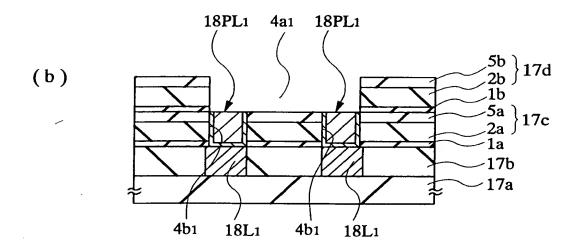


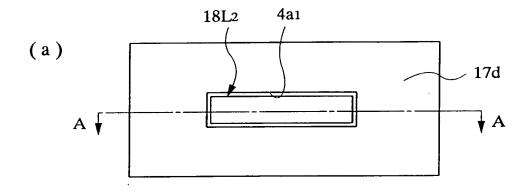
FIG. 25





THE RESERVE OF THE PARTY OF THE

FIG. 26



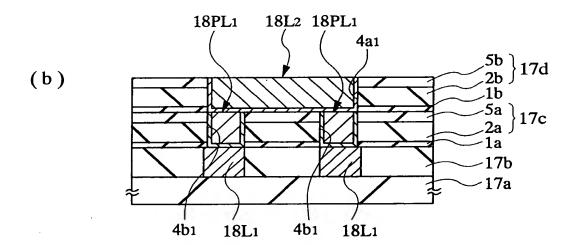


FIG. 27

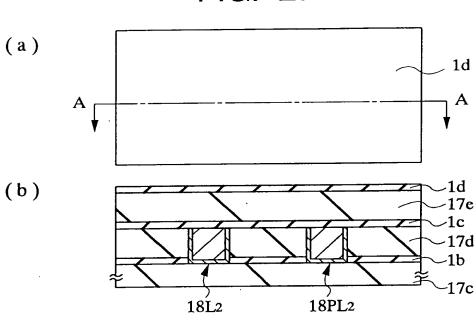


FIG. 28

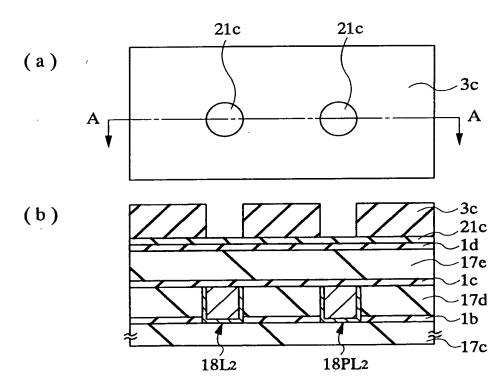


FIG. 29 4b3 17e 4b3 17e (a) 3c Α 4b3 4b3 3c (b) 21c 1d -17e -1c 17d 1b -17c 18L2 18PL2

FIG. 30

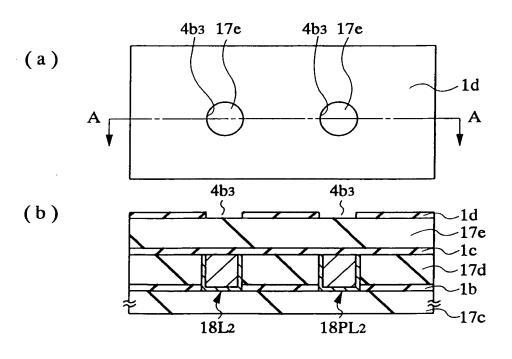
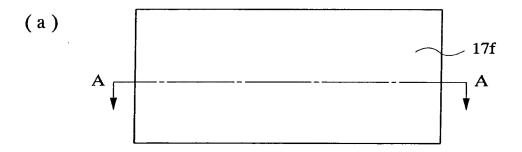


FIG. 31



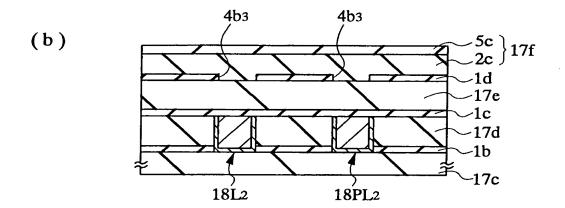
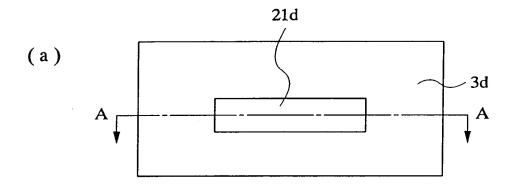


FIG. 32



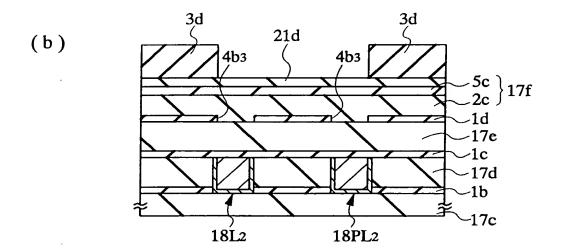
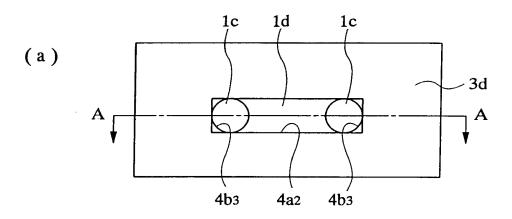


FIG. 33



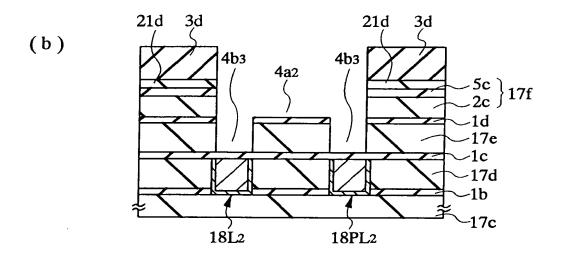
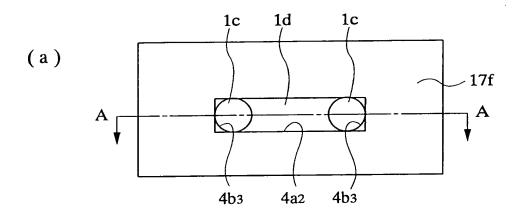


FIG. 34



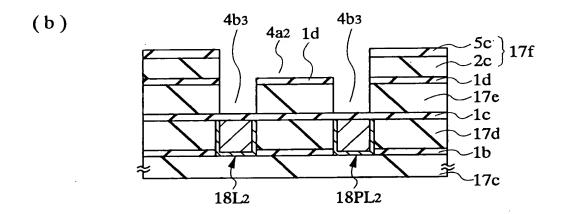
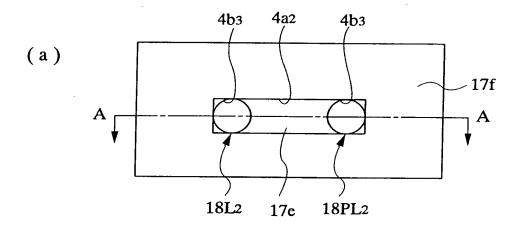


FIG. 35



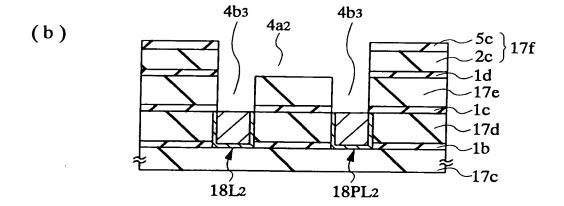
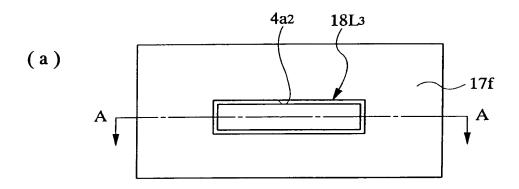


FIG. 36



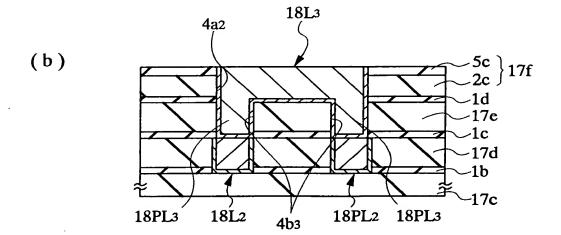


FIG. 37

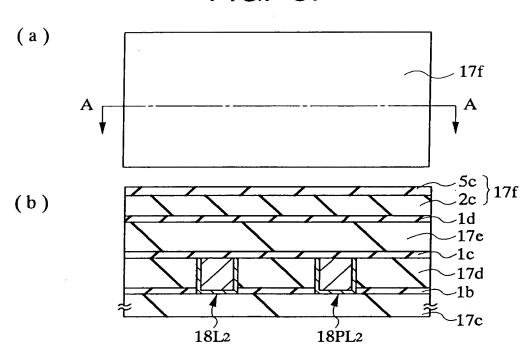


FIG. 38

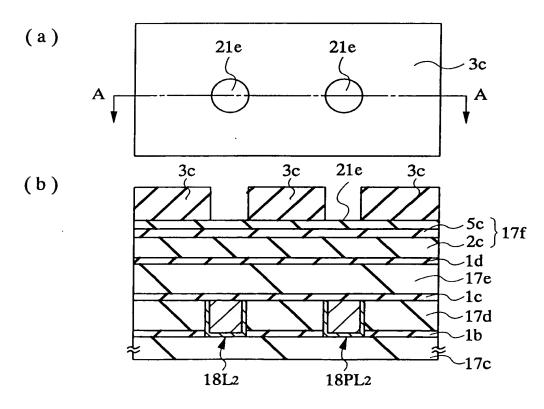
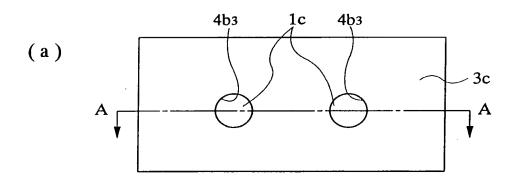


FIG. 39



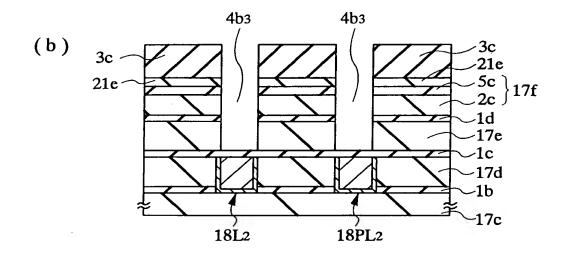
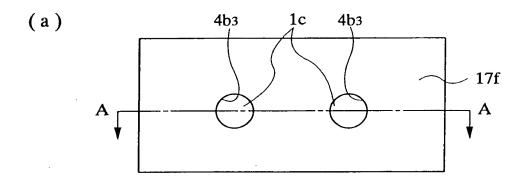


FIG. 40



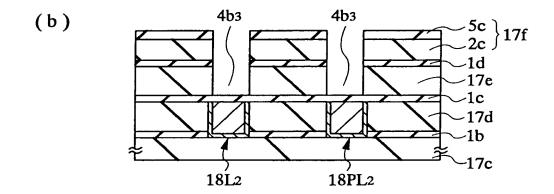
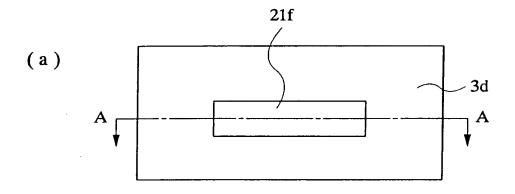


FIG. 41



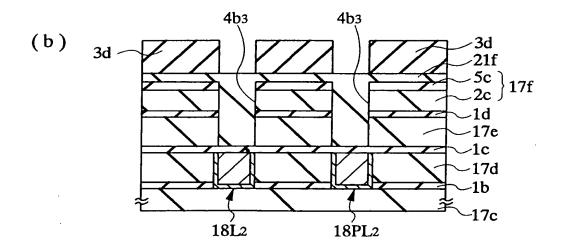
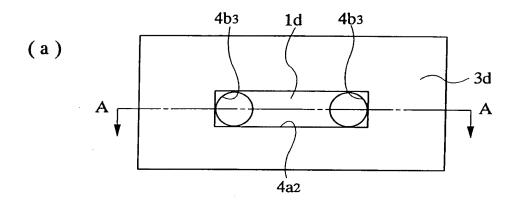


FIG. 42



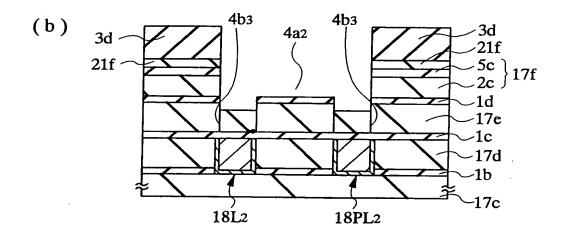
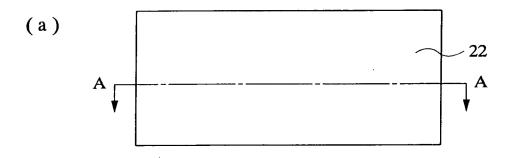


FIG. 43



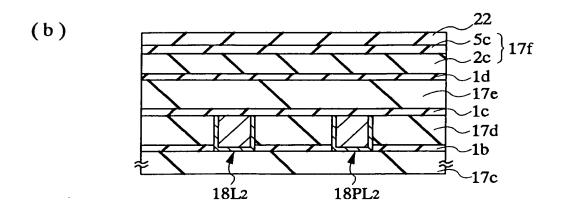
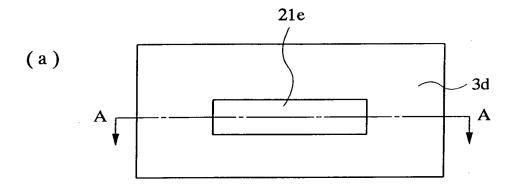


FIG. 44



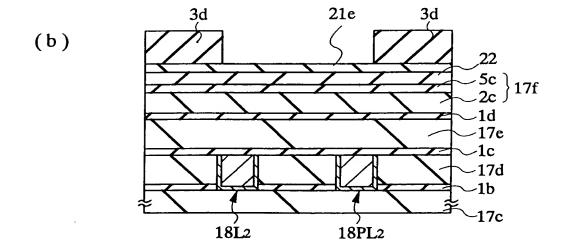
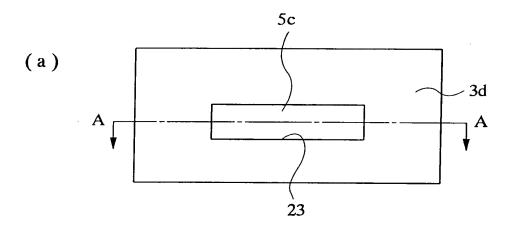


FIG. 45



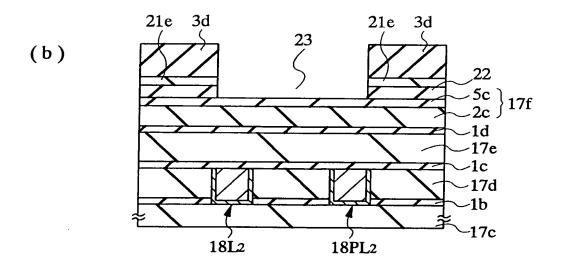
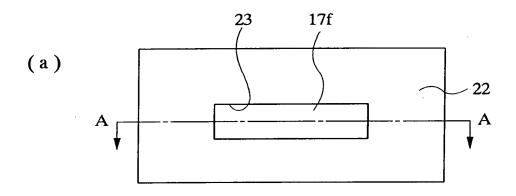


FIG. 46



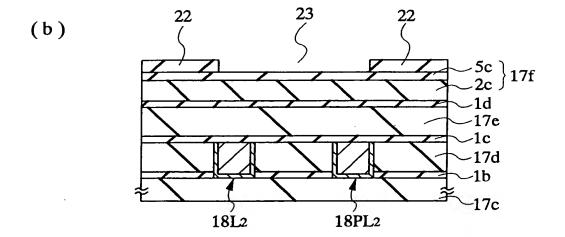
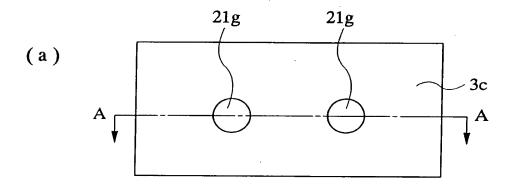


FIG. 47



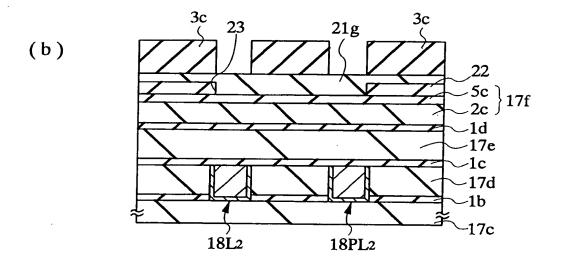
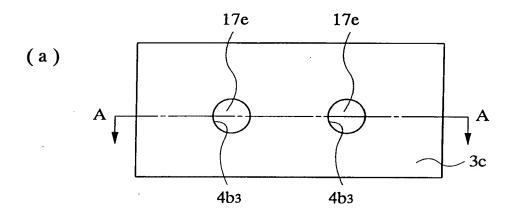


FIG. 48



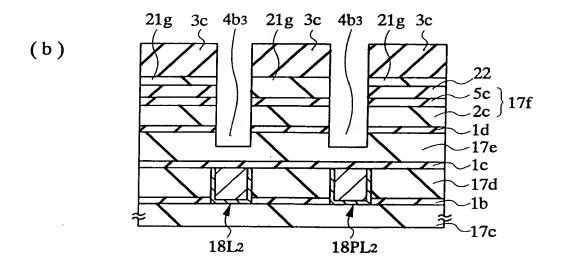
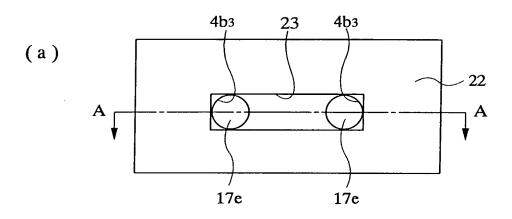


FIG. 49



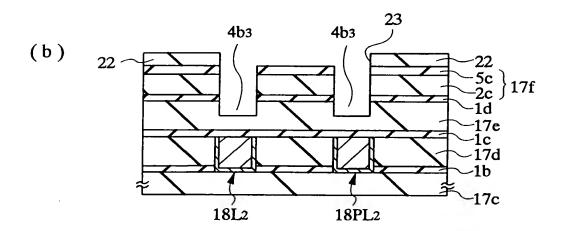
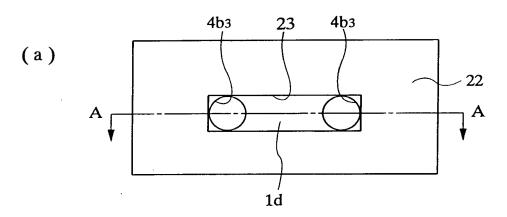


FIG. 50



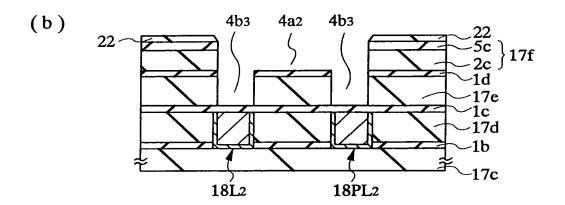


FIG. 51

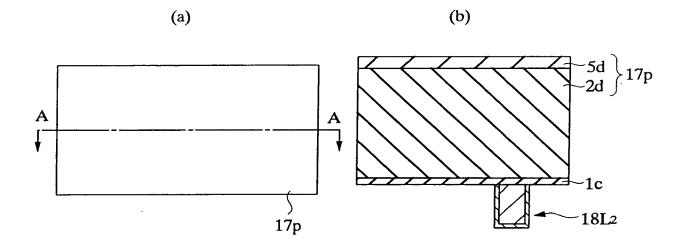


FIG. 52

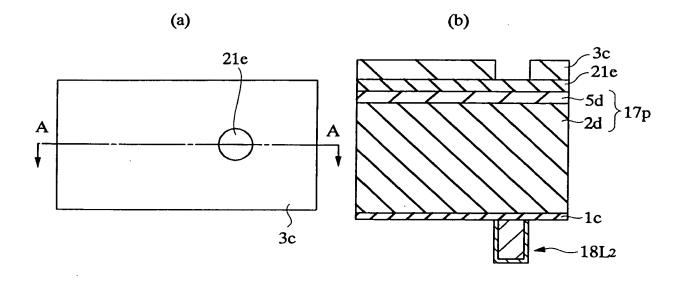


FIG. 53

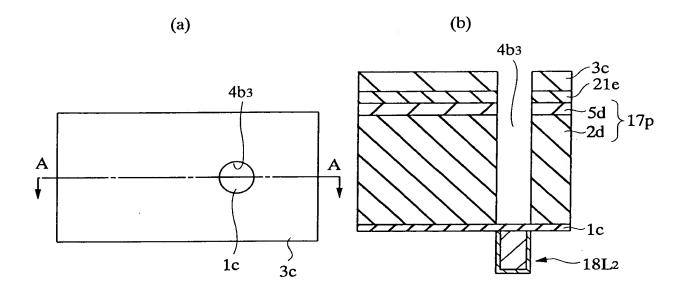


FIG. 54

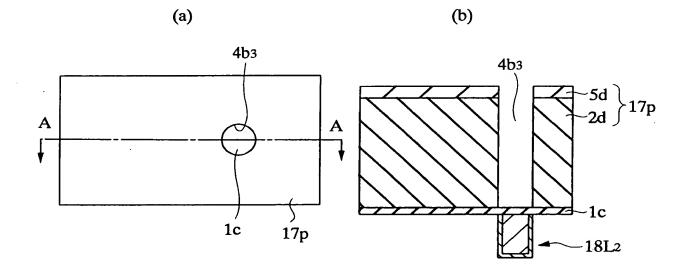


FIG. 55

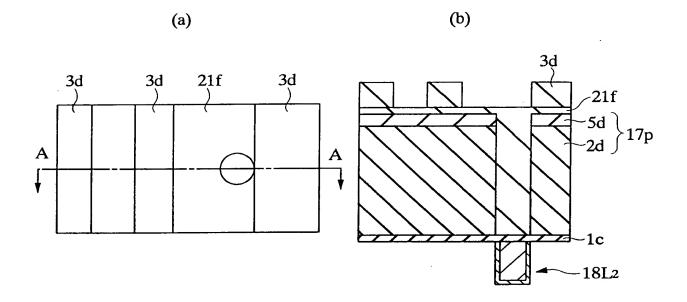


FIG. 56

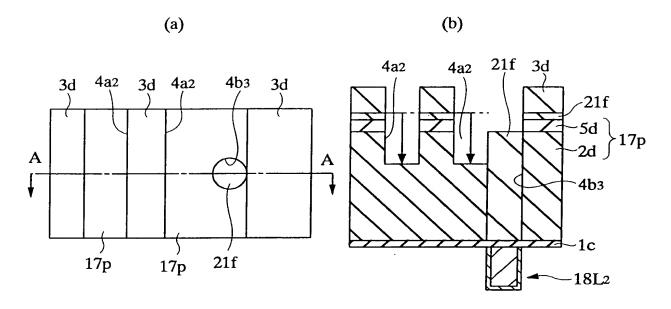


FIG. 57

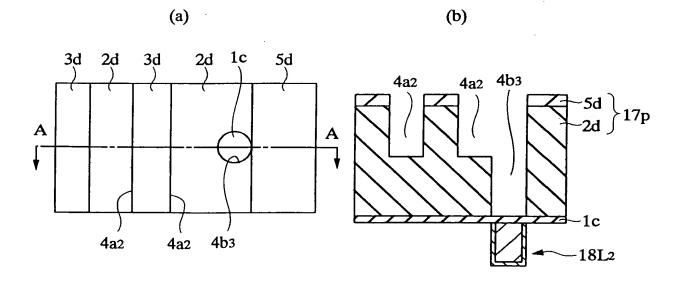


FIG. 58

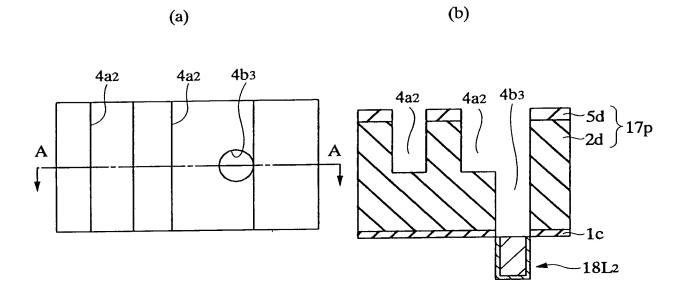


FIG. 59

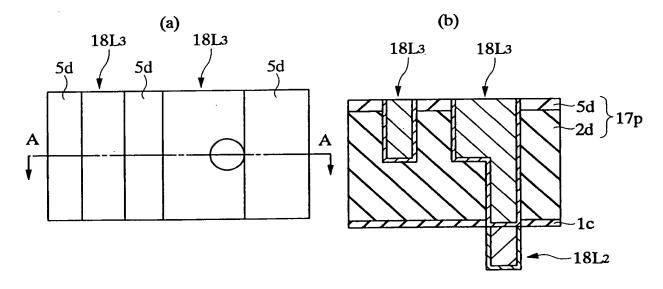
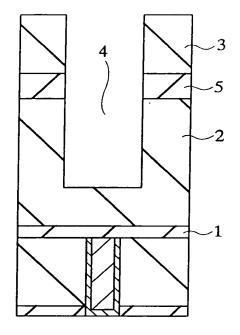


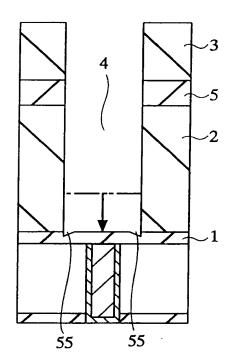
FIG. 60

	C4F8 FLOW RATE > O2 FLOW RATE	C4F8 FLOW RATE≤02 FLOW RATE
SCHEMATIC CROSS- SECTIONAL VIEW	4	55 55
FORM		X (HAVING A SIDE TRENCH)
SELECTIVITY TO SIN	X (NOT GREATER THAN 2)	(NOT GREATER THAN 5)
ETCHING APPARATUS	TOKYO ELECTRON IEM	STRON IEM
ETCHING GAS	C4F8/O2/A r)2/A r
PRESSURE	2 5 mTorr	3 0 mTorr
HIGH-FREQUENCY POWER	500/200W	2200/1400W
STAGE TEMPERATURE	_ S	2 0 °C

FIG. 61

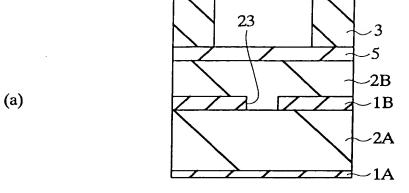


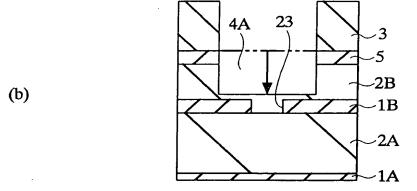
(a)



(b)

FIG. 62





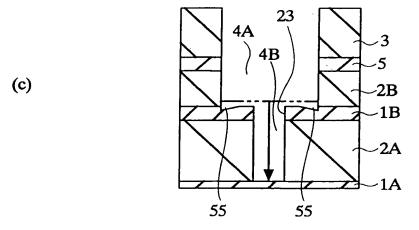


FIG. 63

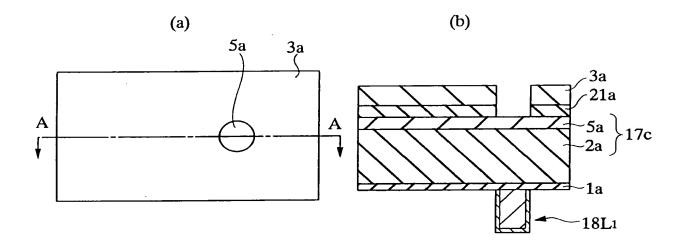


FIG. 64

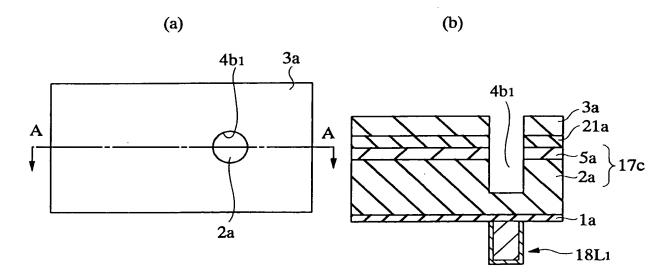


FIG. 65

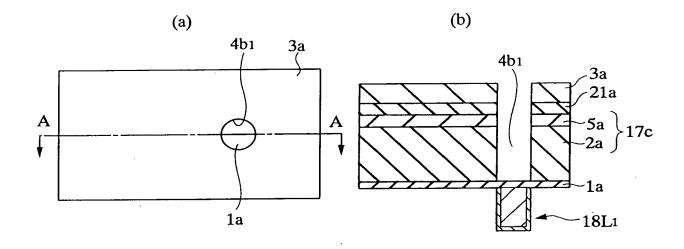


FIG. 66

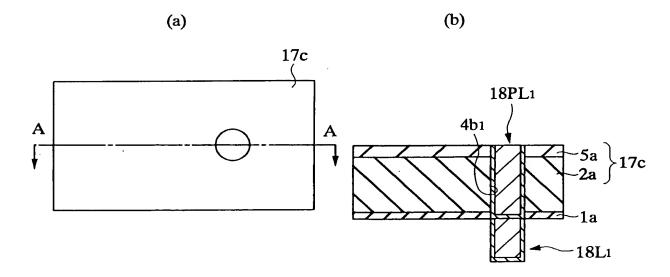


FIG. 67

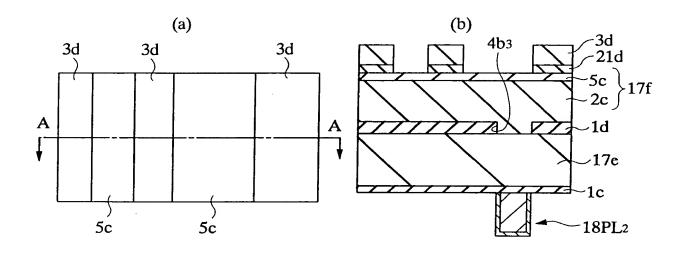


FIG. 68

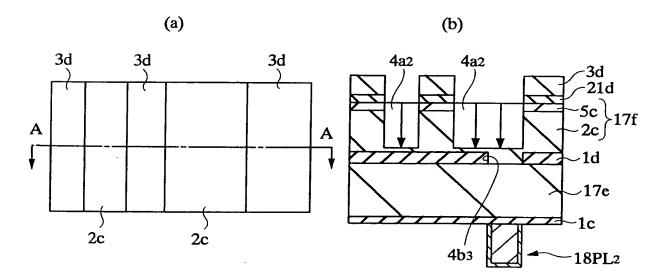


FIG. 69

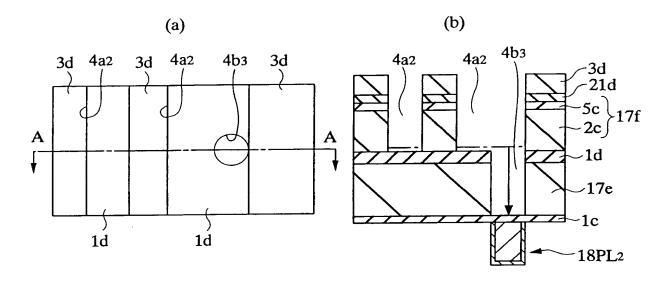


FIG. 70

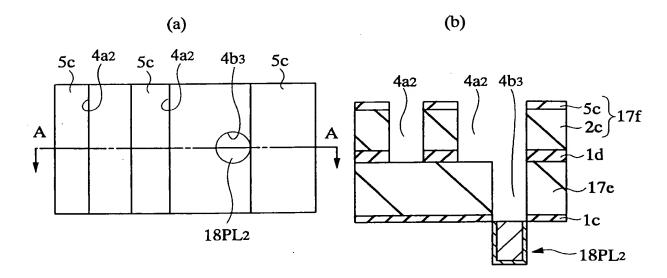


FIG. 71

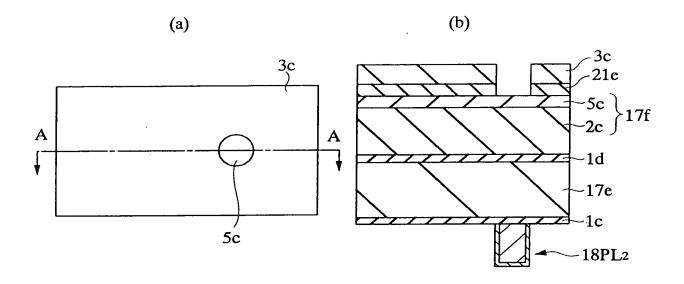


FIG. 72

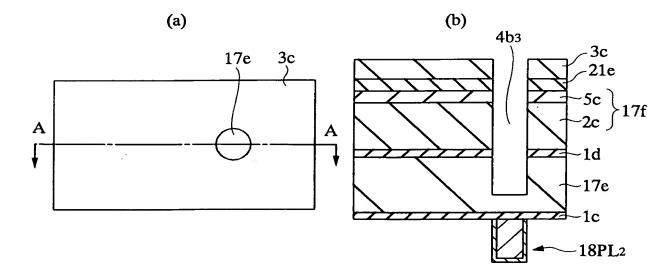


FIG. 73

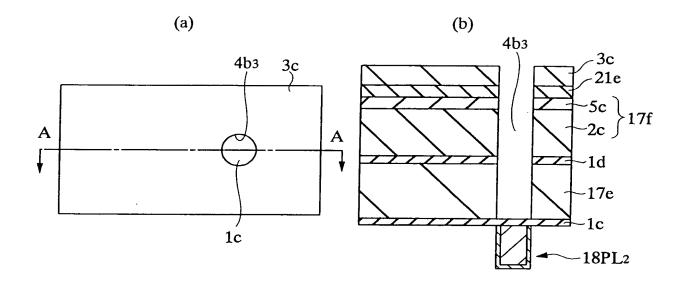


FIG. 74

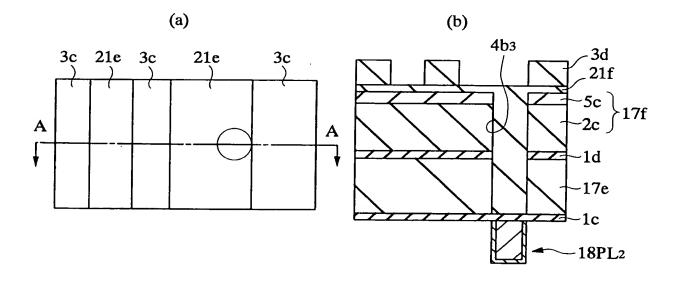


FIG. 75

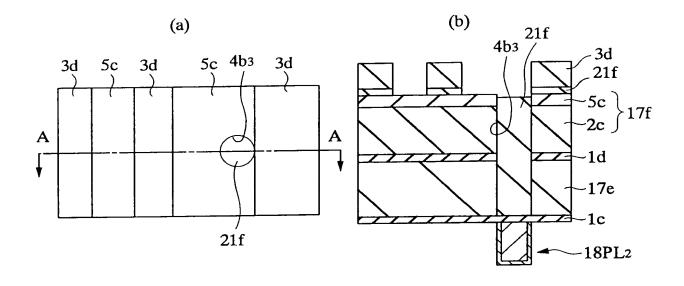


FIG. 76

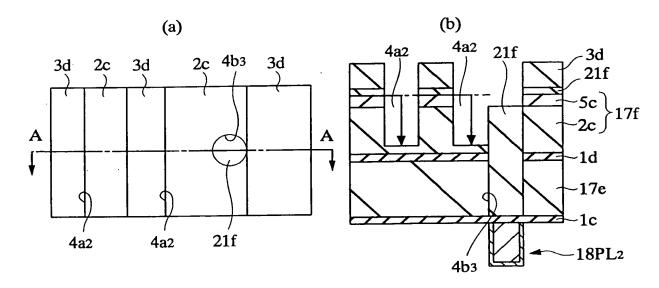


FIG. 77

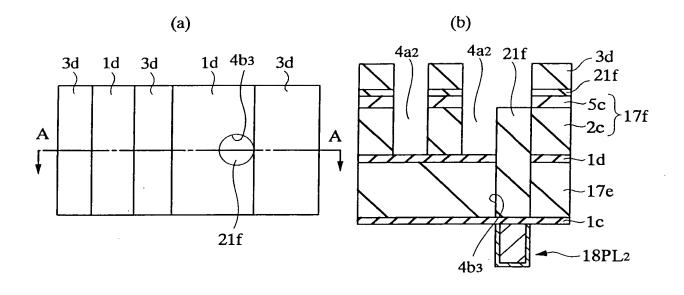


FIG. 78

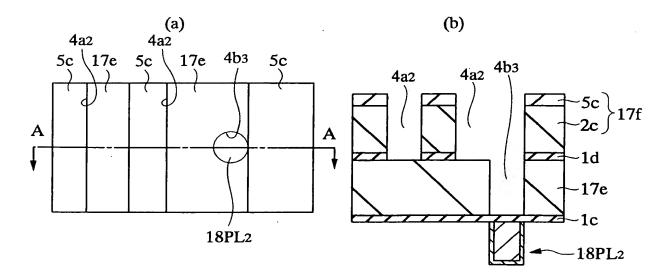


FIG. 79

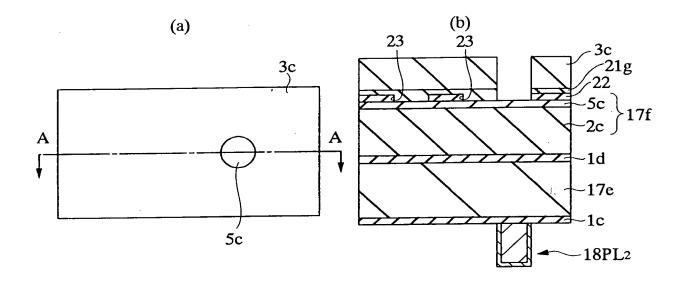


FIG. 80

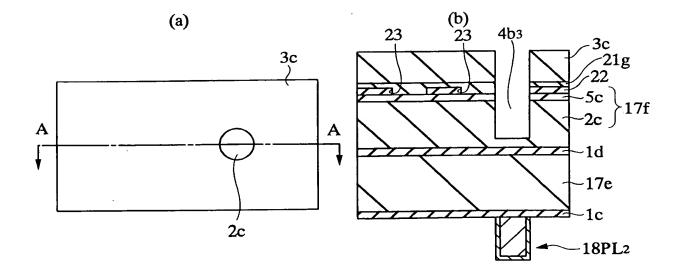


FIG. 81

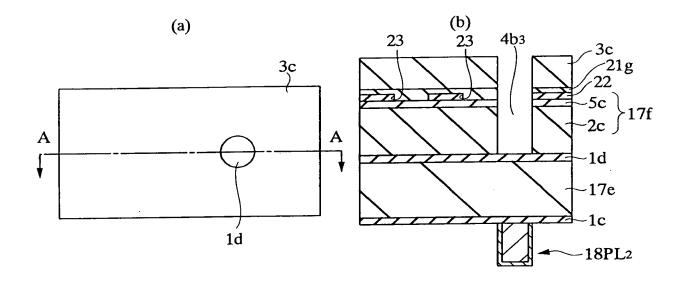


FIG. 82

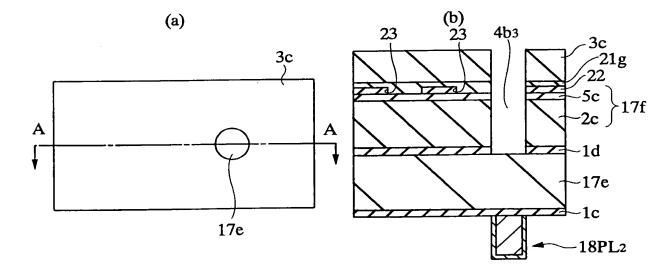


FIG. 83

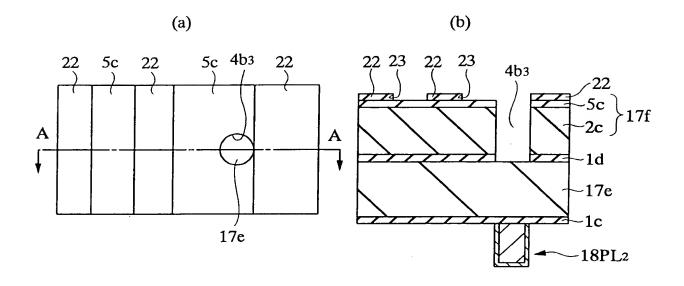


FIG. 84

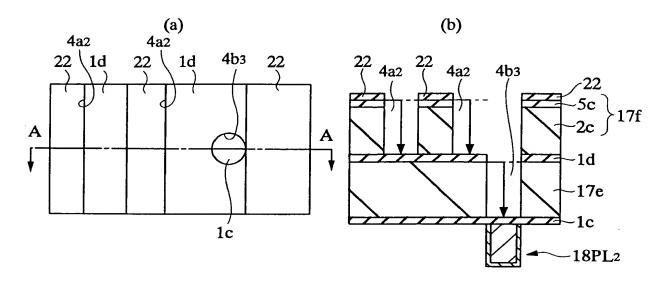


FIG. 85

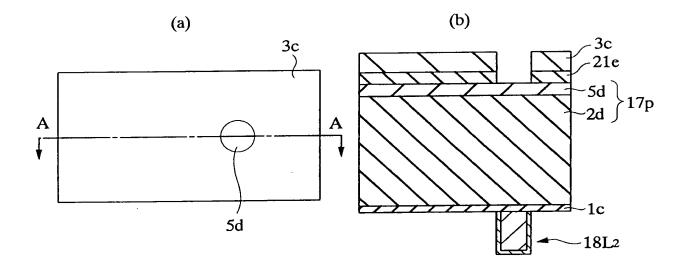


FIG. 86

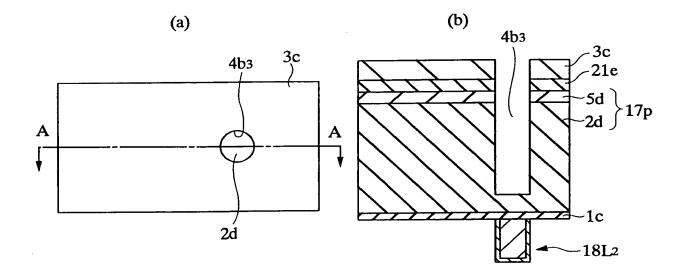


FIG. 87

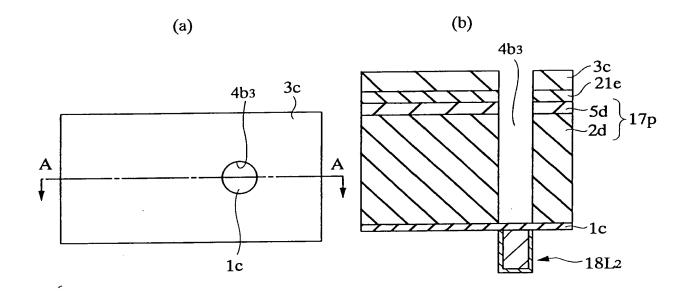
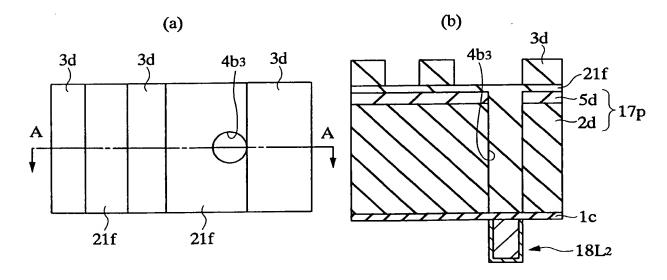


FIG. 88



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FIG. 89

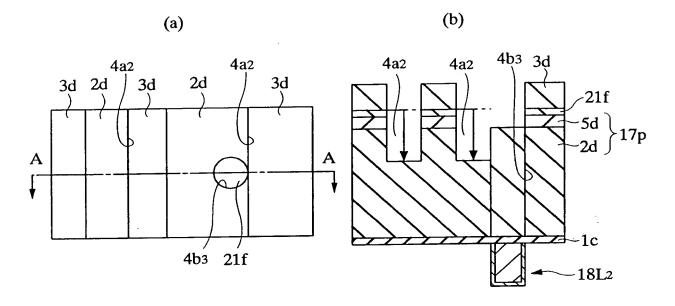


FIG. 90

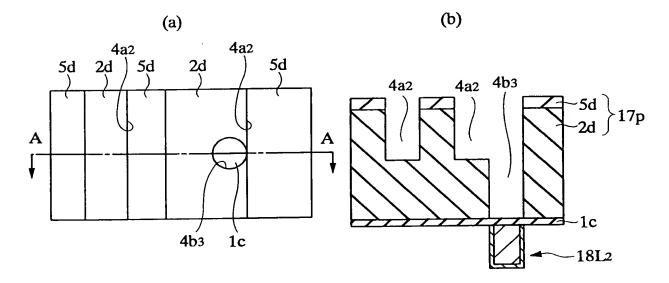
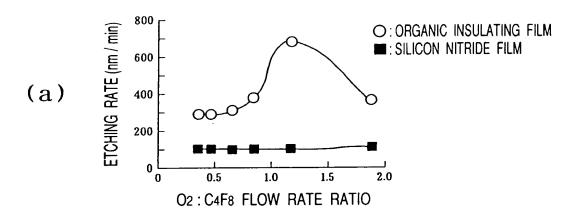


FIG. 91



	O2:C4F8 FLOW RATE RATIO	0.2	0.4	0.6	0.8	1.5
(b)	ETCHING FORM	4 TAPER ANGLE	4 ORGANI LATING	4 C INSU- FILM	4	4

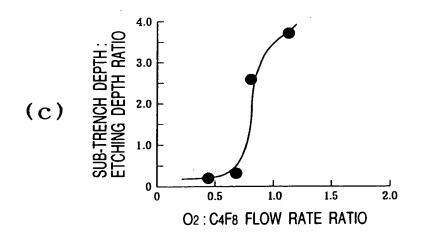
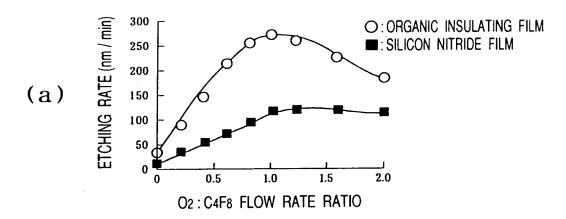


FIG. 92



	O2:C4F8 FLOW RATE RATIO	0	0.5	1.0	1.5	2.0
(b)	ETCHING FORM	TAPER ANGLE	ORGANIC	C INSU- FILM		

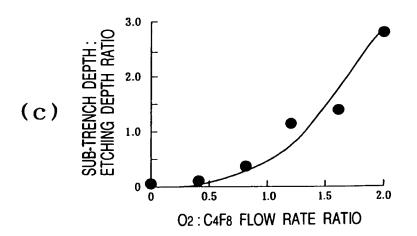


FIG. 93

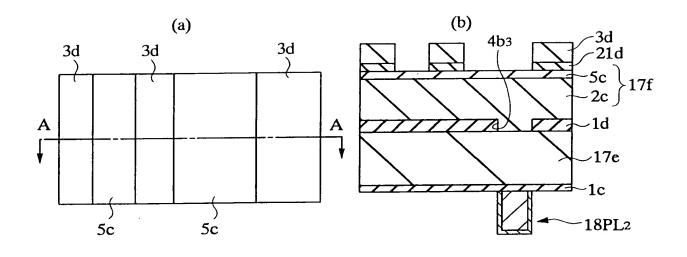


FIG. 94

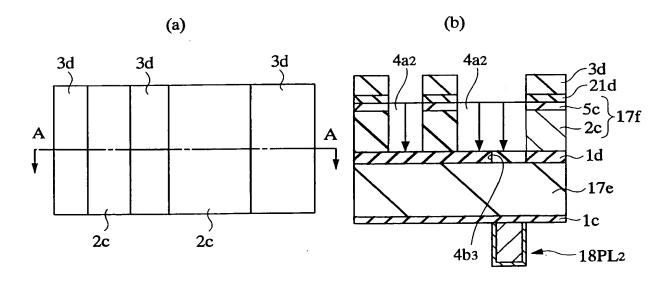


FIG. 95

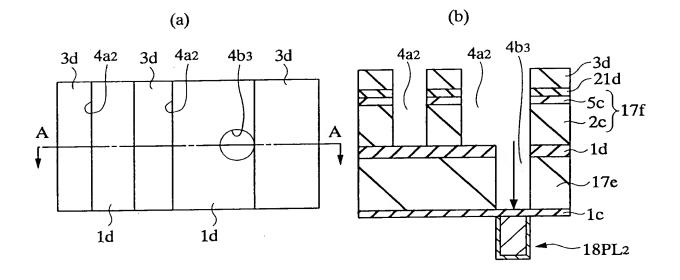


FIG. 96

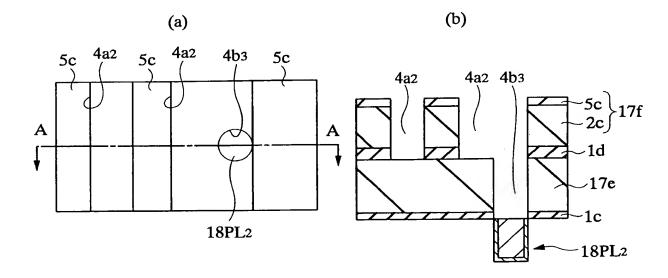


FIG. 97

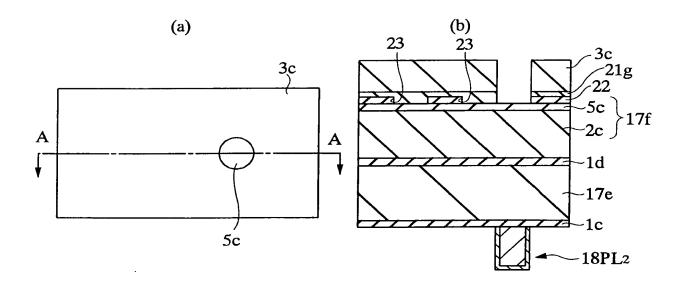


FIG. 98

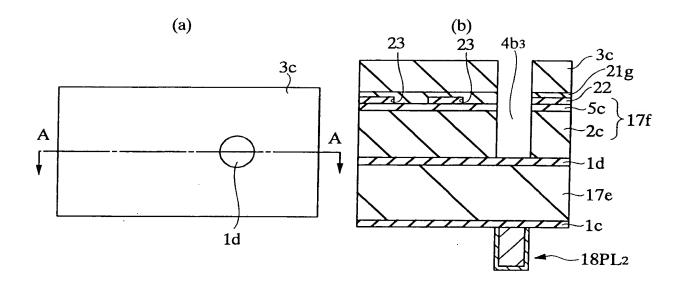


FIG. 99

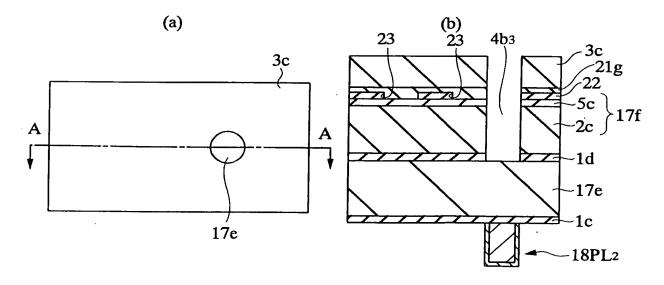


FIG. 100

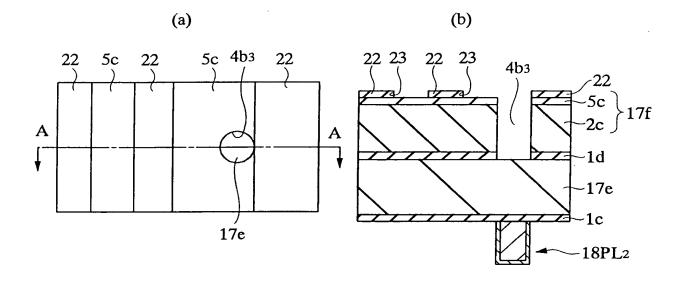


FIG. 101

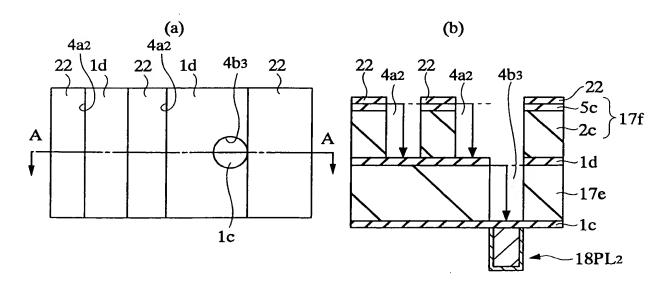


FIG. 102

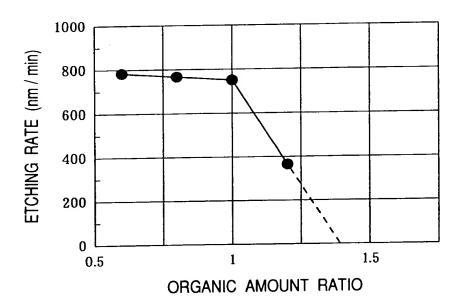
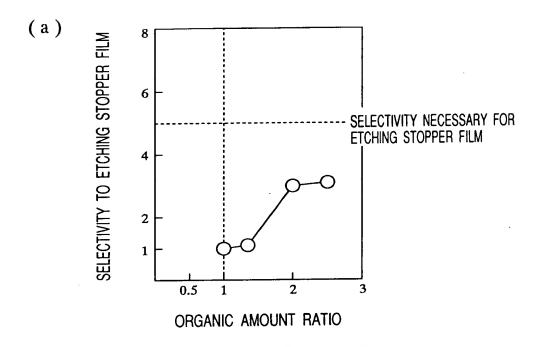


FIG. 103



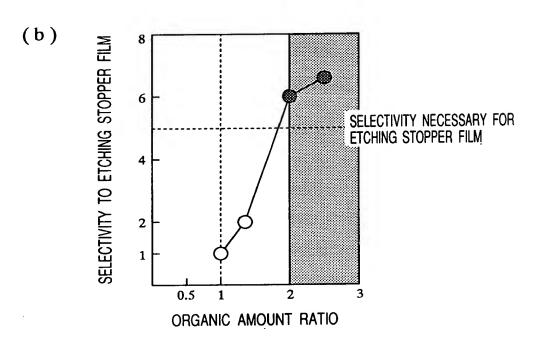
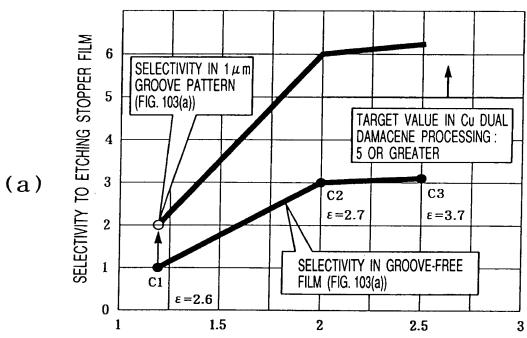


FIG. 104



ORGANIC AMOUNT RATIO (SUPPOSING THAT THE ORGANIC INSULATIG FILM (USED AS AN INTERLEVEL INSULATING FILM) IS 1=20%)

FIG. 105

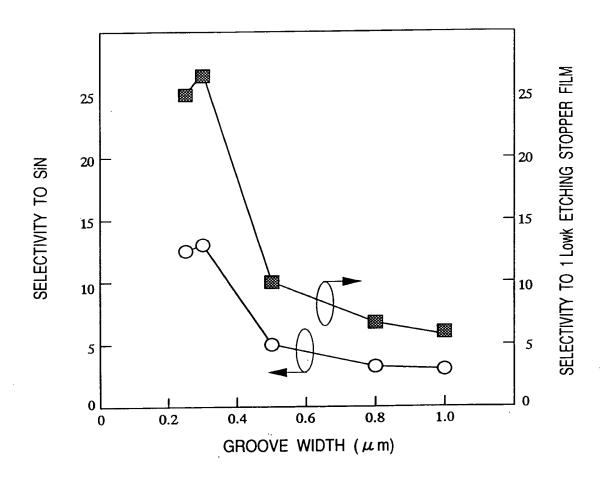
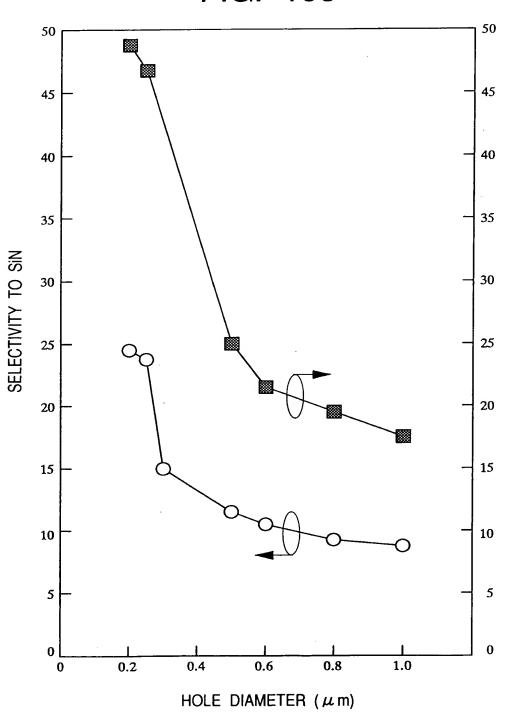


FIG. 106



SELECTIVITY TO ETCHING STOPPER FILM

FIG. 107

	ADHESION	SELECTIVITY (TO ORGANIC SOG)	Cu DIFFUSION- PREVENTIVE LEAK PROPERTY	DIELECTRIC
SiN	0	5~10	0	7.0
PTEOS	0	2~3	×	4.2
Blok	∇	5~10	◁	5.0
Novel etching Stopper film	0	5~10	◁	2.5~4.0

FIG. 108

(a) AMOUNT OF CF DEPOSITS CF CONSUM-PTION RATE* **ORGANIC ETCHING AMOUNT** RATE DEPOSITS: SMALL **SMALL** (LARGE SiO HIGH HIGH CONTENT) **DEPOSITS:** LARGE LARGE (SMALL 111111111 Si0 LOW

C C C SMALL ORGANIC AMOUNT

O* CO

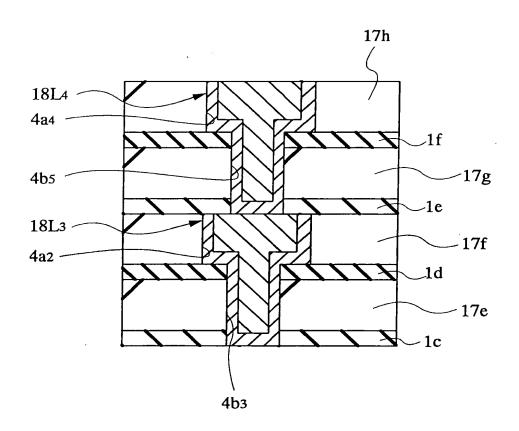
LOW ETCHING RATE

LARGE ORGANIC AMOUNT

LOW

CONTENT)

FIG. 109



individual and bearing

FIG. 110

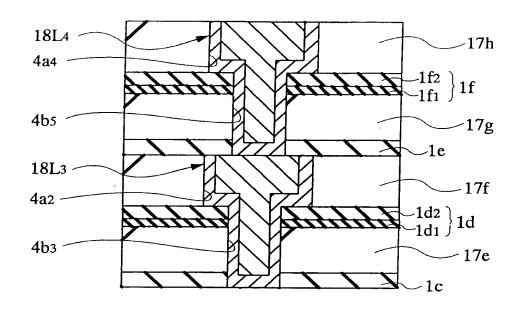


FIG. 111

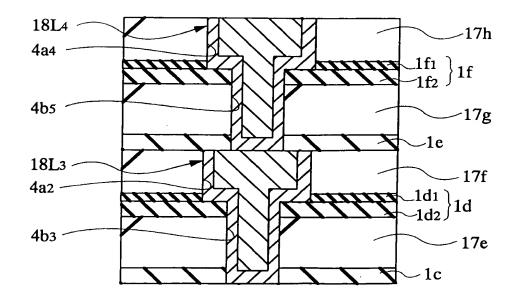


FIG. 112

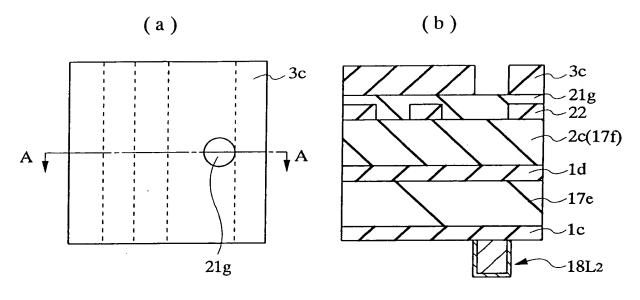
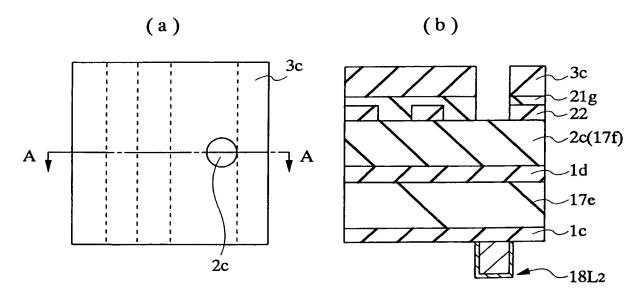


FIG. 113



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FIG. 114

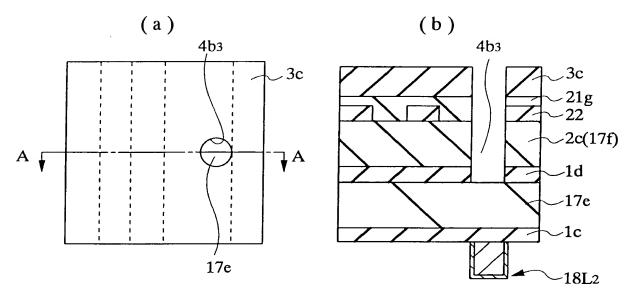
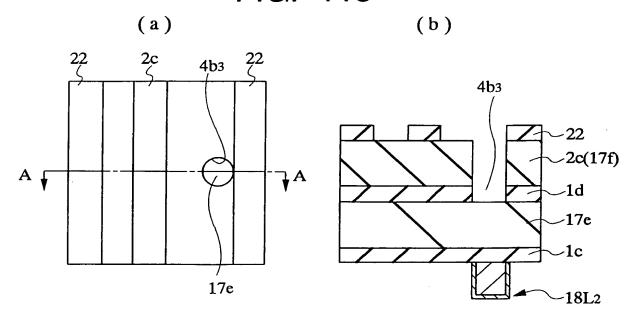


FIG. 115



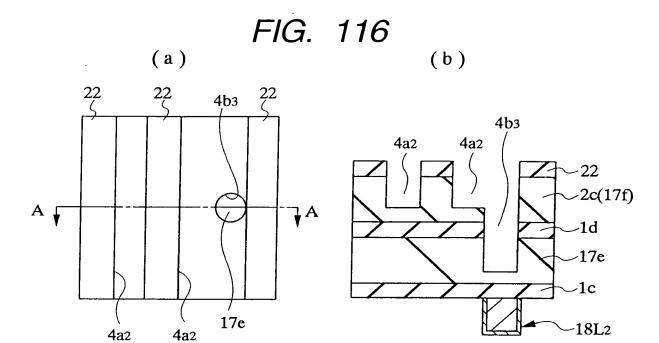


FIG. 117

